REMARKS

INTRODUCTION

Claims 1-15, 20, 23-25, and 27-29 were previously and are currently pending and under consideration.

Claims 1-15, 20, 23-25, and 27-29 stand rejected.

Claims 1 and 10 are amended herein.

No new matter has been added.

Claim 1: He Does Not Teach Measuring Network Latency of Client From Physical Proximity of Client to Globally-Dispersed Servers

Amended claim 1 recites "one of a plurality of load balancing domain name servers (DNS-LBs) deployed in a physical proximity from which the actual network latency of the clients to the globally-dispersed servers may be measured ... the DNS-LB *using its measurements of actual network latency from the clients to the globally-dispersed servers to resolve the DNS lookup requests to respective IP addresses of the some of the globally-dispersed servers*". In other words, the DNS-LB is in physical proximity to the clients such that the DNS-LB itself can measure network latency that a client would approximately experience communicating with server. Notably, the DNS-LB itself measures the network latency to the servers, and because the DNS-LB is in proximity to the clients, the DNS-LB has an accurate estimate of the latency the clients would experience if they communicated with the servers.

The rejection notes that "He et al fails to teach wherein the DNS are placed in physical proximity producing network latency similar to the clients" (Office Action, page 4, line 8). The rejection cites Zisapel as teaching this feature at paragraphs [0036] - [0038].

However, Zisapel cannot teach the noted feature because the load balancing servers in Zisapel (LB1, LB2, LB3) are not in proximity to the client 26. Intuitively, every figure of Zisapel shows the client 26 removed and apart from the load balancing servers LB1, LB2, and LB3. In

every case, the client 26 and the load balancing servers are separated by the network/Internet 14. The load balancing servers of Zisapel are not near the client 26. If they were, it would not make any sense for the load balancing servers to send polling requests 58 to the client 26 (see Figure 2C), because latency between client 26 and load balancing servers would be negligible if they were physically proximate (or if they were able to measure similar latency as what would be experienced by the client 26).

The rejection cites paragraphs [0036] - [0038]. However, nothing in these paragraphs suggests this above-mentioned feature of claim 1. Paragraph [0036] discusses that when client 26 directs a request to LB1 and LB1's servers S1 ... Sn are unavailable, LB1 effectively redirects the client's request (using IP address substitution) to LB2. Paragraph [0037] is an overview of Figures 2A-2F. Paragraph [0038] only discusses LB1's proximity table 54. The proximity table 54, which indicates "subnets and the best server farm site or sites to which requests from a particular subnet should be routed". Paragraph [0038] does mention that how the "best" site is determined is described later. However, as seen in Figures 2A-2F, the load balancing servers measure network latency *from the load balancing servers to the client 26*. In contrast, claim 1 recites the DNS-LB measuring latency not from itself to the clients, but rather from the clients to the globally-dispersed servers.

Measuring latency from node A to node B is much different than measuring latency from node B to node A. It is well known in the field of IP routing that routing is not symmetric. That is, the route from node A to node B can be much different than the route from node B to node A. The latency from a client to a server might involve a local or nearby bottleneck which the server communicating to the client might not experience (e.g., its route avoids the bottleneck or may have a static route that bypasses the bottleneck). Many other scenarios are possible where a routing path in one direction is much different, and is faster or slower, than a routing path in the other direction.

Claim 10

Claim 10 recites "a DNS-LB located in a physical proximity from which the actual network latency from the clients to the globally-dispersed servers is measured by the DNS-LB from a location physically proximate to the ISP's point of presence" and "determining of client-to-server latency performance". As discussed above with reference to claim 1, He does not discuss a LB server measuring network latency, and He's LB servers (LB1-LB3) measure latency to a client 26, not to a server S1...Sn. Furthermore, Zisapel measures latency from a LB server to a client 26, which does not provide "*client-to-server*" latency.

Withdrawal of the rejection is respectfully requested.

Claim 12: He-Zisapel Does Not Monitor Performance By DNS-LB Transmitting Communications to the Servers

Claim 12 recites "monitoring performance of the servers at the received IP addresses by the DNS-LB transmitting communications to the IP addresses of the servers". The rejection cites He, col. 4, lines 5-24, and col. 6, lines 30-67. However, He only discusses the LB (load balancing) server "examining the network load measurements ... to select the most optimal server for the client request" (col. 4, lines 22-24). Nowhere does He indicate that the LB *itself* communicates with the servers to monitor their performance. He states only that the "network measurements [are] gathered" (col. 3, line 8).

The other portion of He cited by the Examiner (col. 6, lines 30-67) discuss only the flow for server resolution. This portion of He has no mention of an LB server monitoring performance by transmitting communications to the IP address of a server being balanced. The only communication from the LB server discussed in this portion of He is that of the LB server sending an IP address to the client that initiated a request. This portion of He does mention the LB server selecting a server based on predetermined criteria (step 253). However, the only criteria mentioned by He (network traffic, number of client request) are measurements purely local to the server being balanced itself. Therefore, He does not teach monitoring performance by transmitting from an LB server to a server being balanced.

Withdrawal of the rejection is respectfully requested.

Should the rejection be maintained, Applicant respectfully requests clarification of the rejection. In particular Applicant requests the Examiner to explain where it is believed that He's LB server sends communications to the IP address of any of servers Server1 ... ServerN or Server2 ... ServerM (see Figure 1).

Claim 20: He's LB Server Does Not Monitor Performance of Servers

Claim 20 recites "deploying a plurality of load balancing domain name servers (DNS-LBs) in a physical proximity from which the actual network latency of the clients connecting to the ISP POPs may be measured". The rejection cites only He. However, He has no mention of clients connecting to ISP POPs. Applicant respectfully notes that a point-of-presence (POP) is a particular term of art well known in the field.

Withdrawal of the rejection is respectfully requested.

Should the rejection be maintained, Applicant respectfully requests explanation of where He or Zisapel teach an ISP POP.

Claim 23: Zisapel Measures Latency from LB Server To Client, Not To Content Server

Claim 23 recites "the identified load balancing server measuring network latency from the load balancing servers to the content servers". The rejection cites Zisapel, paragraphs [0040] - [0042]. However, the cited portion of Zisapel notes that "[t]o determine comparative network proximity, LBI, LB2, and LB3 preferably each send a polling request 58 **to client 26** using known polling mechanisms" (emphasis added, para. [0040], lines 6-10). This is also shown in Figure 2C, where LB1-LB3 send "POLLING REQUEST" 58 to **client 26**, not to the servers S1...Sn. Figure 2D shows **client 26** returning "POLLING RESPONSES" 60. To summarize, Zisapel discusses measuring network latency *from a load balancing server to a client*, not "from the load balancing servers to the content servers" as recited in claim 23. Measuring latency from a LB server to a client is distinctly different than measuring latency from a LB server to a content

server (note that in Figure 2D of Zisapel, the LB servers do not even use network/Internet 14 to communicate with their respective content servers S1...Sn).

Applicant also notes that, as explained above, latency is direction-sensitive, and so an LB server polling client 26 is not the same as a device proximate to the client 26 (e.g., an LB server proximate to the client 26) communicating to a content server.

Withdrawal of the rejection is respectfully requested.

Claim 28

Claim 28 recites "measuring network latency from the DNS-LB to the servers that correspond to the hostname in the request by repeatedly sending communications from the DNS-LB to the servers". The rejection notes that He does not discuss this feature, and cites paragraphs [0036]-[0038] of Zisapel. However, as explained above, Zisapel's LB servers (LB1-LB3) poll the **client 26**, not the serves that are being load balanced.

Claim 29: Incomplete Examination

Claim 29 recites "where the IP address corresponding to the hostname was selected by the DNS-LB based on network measurements obtained by repeated transmissions from the DNS-LB to IP addresses that correspond to the hostname". The rejection does not address this feature. However, in addressing other claims, the Examiner has indicated that He does not discuss this feature, and as noted above, Zisapel's LB servers measure by communicating to the client 26, not the IP addresses of the servers being balanced.

Claim 29 also recites "receiving a referral to an authoritative DNS server (DNS-A) that corresponds to the hostname". The rejection does not address this feature.

Withdrawal of the rejection is respectfully requested.

Claims 1, 10, 12, 20, 23, 28, and 29: He Does Not Reply With Load Balanced Resolved IP Address Of Hosname Being Looked Up

The independent claims recite various features by which a client's DNS lookup request (or the like) is actually resolved to a balanced IP address of the hostname. That is, the request is for a hostname's IP address, and the system returns a load balanced IP address for the hostname. He discusses a generic balancing system where a client's DNS request, if not answered by its client DNS system 45, is answered with the address of another *DNS server* which the client can use to again try to resolve the hostname. Note that columns 1-4 of He describe a complete balancing system *without reference to DNS*; DNS is described as only one type of service that can be balanced using the same generic system described in columns 1-4.

Also, as noted in columns 5-6, when the client's main DNS service point (DNS client system 45) cannot resolve the client's request, the system "provides an IP number to the client system 43. Using the provided IP number, the client system directs **its request** to that number" (col. 6, lines 1-4). The only "its [client's] request" mentioned is the client's DNS lookup request itself (see, e.g., col. 5, lines 1-6 and 47). Thus, when DNS client 45 cannot resolve a client lookup request, He does not return an address for the requested hostname, rather it returns an IP address of *another DNS server* (akin to a redirect) which the client then uses to again request a name lookup. In sum, when system 45 cannot resolve the client's request, it returns the address of a DNS server, which is not the IP address of the requested hostname.

Withdrawal of the rejection is respectfully requested.

Claims 1, 10, 12, 20, 23, 28, and 29: No Prima Facie Case of Obviousness

Recent developments in case law and PTO policy have made it clear that when a combination is offered by an Examiner, the Examiner must explain the reasoning and factual underpinning for making the proposed combination. The present rejection is traversed because the reason for the combination, for each of claims 1, 10, 12, 20, 23, 28, and 29 is only "in order indicate subnets and the best server farm site or sites to which requests from a particular subnet should be routed". The rejection does not explain why this would be desirable in He or what deficiency or problem of He this would solve. The rejection does not explain how the

offered motive would improve He. In fact, He already has a mechanism to pick a site for a request, so the addition of Zisapel appears redundant or superfluous.

Finally, the offered motive of allowing a load balancing server "to indicate subnets and the best server farms site or sites to which request from a particular subnet should be routed" appears to be incompatible with He. He performs load balancing by measuring actual load (e.g., CPU usage) of the servers being balanced. He does not take into account network performance or latency. Therefore, it does not matter what subnet a client is on, or even where its network location is. All that matters in He is how heavily loaded the servers are.

Withdrawal of the rejection is respectfully requested.

REQUEST FOR SPECIFIC REPLY TO ARGUMENTS PRESENTED ABOVE

Applicant respectfully requests that each separate argument above be addressed by the Examiner, as this may help the Applicant to evaluate the possible merits of the arguments should the present Application become ripe for appeal.

CONCLUSION

The present application is in condition for allowance. A prompt action to such end is requested.

Should any fees be required in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-0463.

If the Examiner believes a telephone interview would be helpful to expedite prosecution, the Examiner is invited to contact Applicant's undersigned representative at the telephone number below.

Respectfully submitted,

Microsoft Corporation

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By: /James T. Strom/

James T. Strom, Reg. No.: 48,702
Attorney for Applicants
Direct telephone 425-939-0781